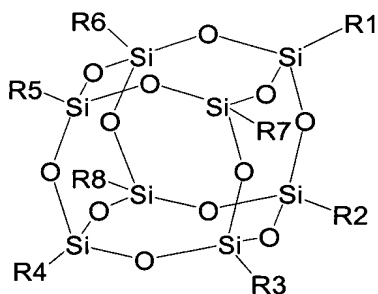
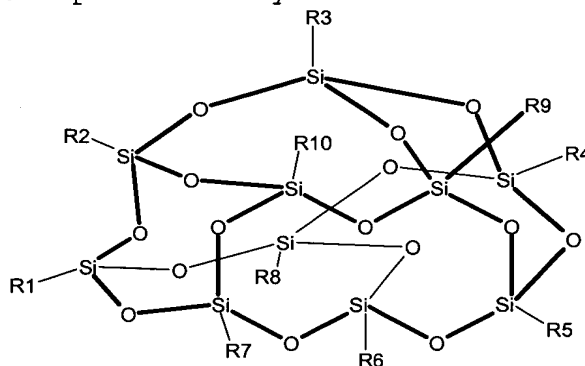


## [CLAIMS]

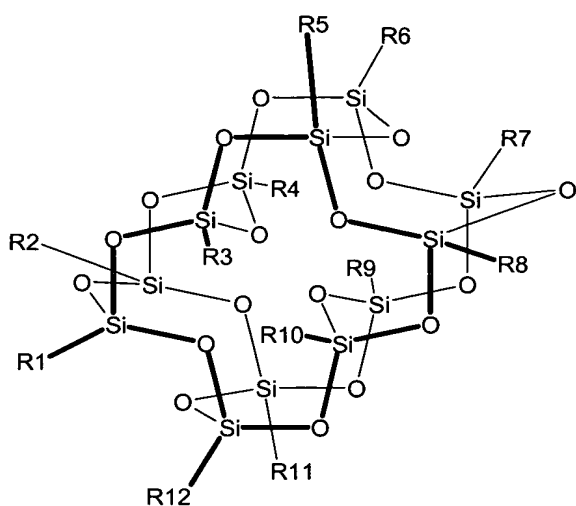
1. A radiation curable ink composition comprising at least one initiator and at least one polyhedral oligomeric silsesquioxane (POSS) represented by the following empirical formula  
 $[R(SiO_{1.5})]_n$  wherein  $n=4,6,8,10,12,14,16$  and larger and each R is independently hydrogen, an inorganic group, an alkyl group, an alkylene group, an aryl group, an arylene group, or non-heterocyclic group-containing organo-functional derivatives of alkyl, alkylene, aryl or arylene groups.
2. Radiation curable ink composition according to claim 1, wherein said polyhedral oligomeric silsesquioxane comprises at least one R-group comprising a curable functional group.
3. Radiation curable ink composition according to claim 2, wherein said curable functional group is selected from the group consisting of epoxide, aziridine, acrylate, methacrylate, acrylamide, methacrylamide, olefinic and styryl groups.
4. Radiation curable ink composition according to claim 2, wherein said curable polyhedral oligomeric silsesquioxane (POSS) has a specific cage structure as represented by formulae I to III or partial cage structures as represented by formula IV:



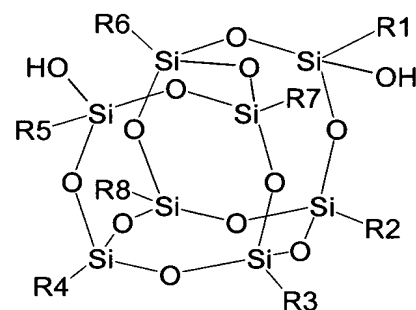
I



II



III



IV

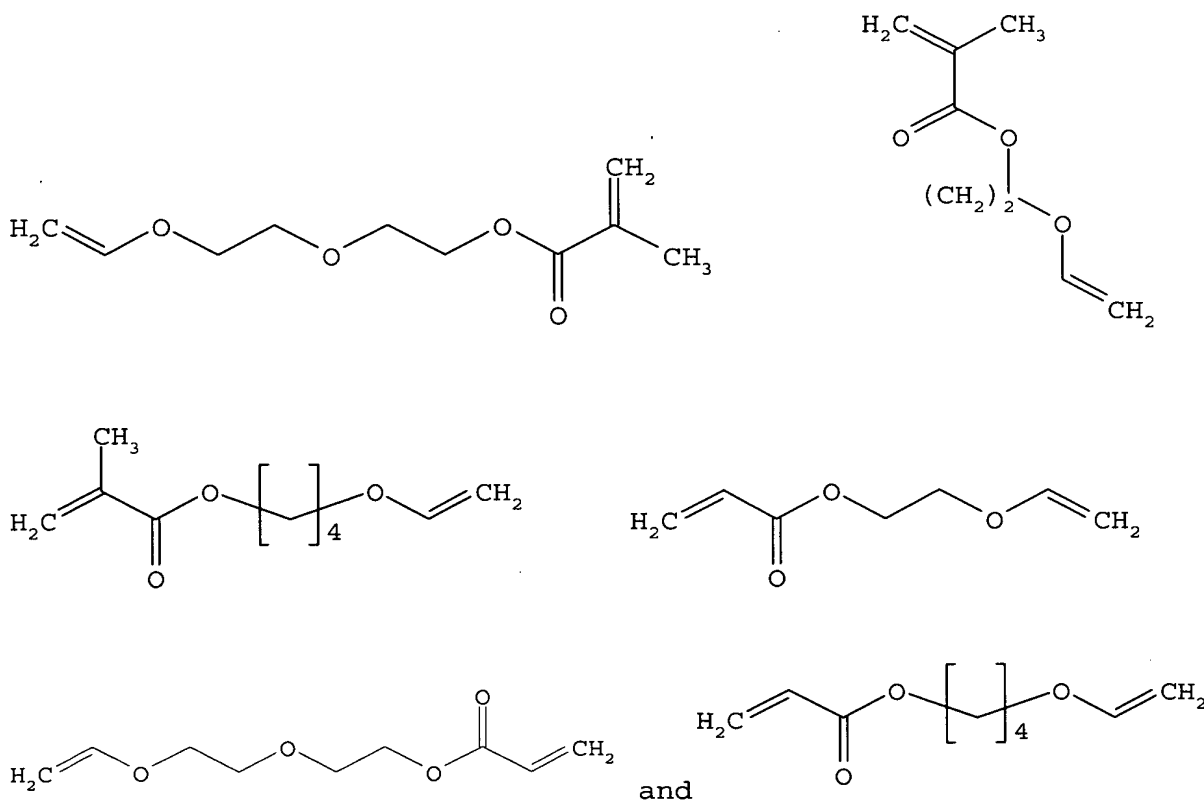
wherein R1 to R12 represent hydrogen, inorganic or organic substituents and at least one of the R1-R12 groups comprises a curable functional group.

5. Radiation curable ink composition according to claim 1, wherein said initiator is a photoinitiator.
6. Radiation curable ink composition according to claim 1, wherein said composition further contains an initiator synergist.
7. Radiation curable ink composition according to claim 1, wherein said composition further contains at least one colorant.
8. Radiation curable ink composition according to claim 7, wherein said colorant is a dye.
9. Radiation curable ink composition according to claim 7, wherein said colorant is a pigment.
10. Radiation curable ink composition according to claim 7, wherein said colorant is an inorganic pigment.
11. Radiation curable ink composition according to claim 7, wherein said colorant is a dispersed pigment or a solid solution of a pigment.
12. Radiation curable ink composition according to claim 9, wherein said pigment is selected from the group consisting of Pigment

Yellow 1, 3, 128, 109, 93, 17, 14, 10, 12, 13, 83, 65, 75, 74, 73, 138, 139, 154, 151, 180, 185; Pigment Red 122, 22, 23, 17, 210, 170, 188, 185, 146, 144, 176, 57:1, 184, 202, 206, 207; Pigment Blue 15:3, Pigment Blue 15:2, Pigment Blue 15:1, Pigment Blue 15:4, Pigment Blue 15:6, Pigment Blue 16, and carbon black.

13. Radiation curable ink composition according to claim 1, wherein said composition further comprises at least one photopolymerizable compound selected from the group consisting of vinyl ether methacrylates and vinyl ether acrylates.

14. Radiation curable ink composition according to claim 13, wherein said vinyl ether methacrylate or vinyl ether acrylate is selected from group consisting of:



15. Radiation curable ink composition according to claim 1, wherein said ink composition further contains a second photopolymerizable monomer, oligomer or prepolymer.

16. Radiation curable ink composition according to claim 15, wherein said second monomer is selected from the group

consisting of amino modified polyether acrylates, urethane acrylates, polyester acrylates, polyether acrylates, and epoxy acrylates.

- 5 17. Radiation curable ink composition according to claim 1, wherein said composition further contains water as a solvent.
18. Radiation curable ink composition according to claim 1, wherein said composition further contains water and/or at least one  
10 organic solvent.
19. Radiation curable ink composition according to claim 1, wherein said composition further comprises at least one conducting or semiconducting polymer.  
15
20. Radiation curable ink composition according to claim 19, wherein said at least one conducting or semiconducting polymer is selected from the group consisting of substituted polyanilines, unsubstituted polyanilines, polypyrroles, substituted polythiophenes, unsubstituted polythiophenes,  
20 substituted poly(phenylenevinylenes), unsubstituted poly(phenylenevinylenes), and polyfluorenes.
21. Radiation curable ink composition according to claim 1, wherein  
25 said composition further comprises at least one antioxidant.
22. Radiation curable ink composition according to claim 1, wherein said composition further comprises a dendrimer.
- 30 23. Radiation curable ink composition according to claim 1, wherein the viscosity of said ink composition is between 1 and 100 mPa.s at 25 °C.
24. Radiation curable ink composition according to claim 1, wherein  
35 said radiation curable ink composition is a radiation curable ink-jet ink composition.
25. A process for obtaining a colourless, monochrome or multicolour ink jet image comprising the steps of jetting one or more  
40 streams of ink droplets having a radiation curable ink composition onto an ink-jet ink receiver material, and subjecting the obtained image to radiation curing, wherein said radiation curable ink composition comprises at least one

initiator and at least one polyhedral oligomeric silsesquioxane (POSS) represented by the following empirical formula  $[R(SiO_{1.5})]_n$  wherein  $n=4,6,8,10,12,14,16$  and larger and each R is independently hydrogen, an inorganic group, an alkyl group, an alkylene group, an aryl group, an arylene group, or non-heterocyclic group-containing organo-functional derivatives of alkyl, alkylene, aryl or arylene groups.

26. Process according to claim 25, wherein said radiation curing is performed by means of at least one ultra-violet source and/or at least one electron beam source.
27. Process according to claim 25, wherein said curing is a free radical polymerization process.
28. Process according to claim 25, wherein said curing is a cationic polymerization process.
29. Process according to claim 25, wherein said ink-jet receiving material is selected from the group consisting of paper, coated paper, polyolefin coated paper, cardboard, wood, composite boards, plastic, coated plastic, canvas, textile, metal, glasses, plant fibre products, leather, magnetic materials and ceramics, or supports provided with an ink-accepting layer.
30. Process according to claim 29, wherein said ink accepting layer contains a microporous pigment or a polymer blend.